

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

1.9
Ex61A
c2

U.S. DEPT. OF AGRICULTURE
NAT'L AGRIC. LIBRARY
RECEIVED

AGRICULTURAL NOTES

SEP 14 '84
PUBLISHED BY
PORTO RICO AGRICULTURAL EXPERIMENT STATION, MAYAGUEZ
OFFICE OF FARM MANAGEMENT, FEDERAL BUILDING, SAN JUAN

Office of Experiment Stations
RECEIVED

★ JUL 3 - 1928

Answered

No. 43 Page 1.

San Juan, Porto Rico, July, 1928.

SOME CITRUS PROBLEMS.

ART. 1 - IDENTIFICATION OF BUDDING STOCK.

By Henry C. Henricksen.

When a citrus tree needs special attention for any cause whatsoever, pathological or physiological, the decision regarding treatment to be applied must be based partly upon the stock the tree is budded on. When that is not known, which is usually the case especially in old groves, the only recourse is to scarify the bark on the crown roots and lower part of the trunk and wait for sprouts to grow from the injured spots. Naturally that method is objectionable for several reasons, one of which is that by the time leaves are far enough developed for identifying the stock the tree may be beyond saving. In order to remedy this difficulty a method for the immediate identification of the stock and simple enough for the average planter to use has been perfected by the writer and will be described in this article.

BASIS OF METHOD. - Citrus fruits contain glucosides, the identity of which differ according to the fruit; one that is common in the orange is called hesperidin and another that is specific for the grapefruit is called naringin. Although the two differ, one from another, they both contain phenols which can be detected by the usual phenol tests. The amounts of glucosides present in the roots were, in this investigation, found to vary to such an extent that the variations could be used as a basis for a method of investigation.

THE METHOD. - The only reagent needed is solid ferric chloride which can be obtained at most drug stores. Five grams of that dissolved in 100 cc. water will be enough to last for a long time and it will keep for years if the bottle is well corked.

Of the tree in question dig up a root the size of a lead pencil and cut off a section a few inches long; wash it in water until free from all soil particles and wipe it dry; grind 1-1/2 to 2 inches of it in a pencil sharpener with grooved rollers. If the root is the full size of a lead pencil 1-1/2 inches is equal to 1 gram, if thinner 2 inches will be required. Pour the ground material into a small mortar, or a cup if no mortar is available. Moisten with 4 cc. water and pestle the mass until uniformly moist, after which leave it for about 5 minutes.

From the moistened material a liquid can be obtained, the clearness of which will vary with the facilities available for extracting it. Squeezing through two layers of moistened muslin is not very satisfactory but it will serve. A specially made press consisting of a small cylinder with a well fitting plunger is excellent.

Pour the liquid into a narrow test tube and add 4 to 6 drops of the ferric chloride solution. Shake the mixture and let it stand about 5 minutes, after which compare it with standards previously prepared from roots of citrus of known origin. This will at once indicate the identity of the stock.

THE TEST. - In Porto Rico the stocks used for budding are grapefruit (Citrus grandis), sour orange (Citrus aurantium), rough lemon (Citrus limonia), and occasionally sweet orange (Citrus sinensis). These are, therefore, the ones that must be identified.

The correct procedure, in a case like this, is naturally to start testing known samples. To those who are not entirely familiar with the identification of citrus trees by means of leaf forms the following reminders may be helpful: The grapefruit leaf consists of the leaf-blade and the appendix on the petiole, called apron in horticultural parlance, the leaf-blade slightly overlapping the lobes of the apron. The leaf of the sour orange is like that of the grapefruit with the exception that the blade does not overlap the apron; the two meet evenly as if they had been cut apart. On the leaf of the sweet orange the apron is rudimentary and on that of the rough lemon it is entirely absent. With that as a guide roots of old trees, not nursery stock, surmounted by leafy shoots should be tested as described above. Such tests will serve as instruction and furnish standards with which to compare the unknown. The color developed by ferric chloride is darkest with material from the sour orange, lighter with that of the grapefruit, yet lighter with that of the sweet orange and practically no color results with material from the rough lemon.

The roots of the grapefruit and the sweet orange may produce varying colors according to the variety. Those of the so-called native or wild grapefruit produce a color much lighter than the sour orange and the two can readily be distinguished one from another. On the other hand the color may be so light as to resemble that of the sweet orange, but remembering that the latter was seldom used for budding stock in years past it is usually safe to eliminate it. The cultivated grapefruit may offer difficulties at times for the color produced by its roots is occasionally nearly as dark as that produced by the sour orange. But after becoming well acquainted with the method a grower should not often make the wrong diagnosis.

